

REMARKS

Claims 1, 3-12, 14-21, 23-25, 27-36, 38-45, 47 and 48 are pending in the application. By this Amendment, claims 2, 13, 22, 26, 37 and 46 are cancelled without prejudice or disclaimer to their filing in a future related application. Additionally, claims 1, 4, 6, 8, 10-12, 19, 23-25, 28-30, 32, 34-36, 43 and 47-48 are amended. For at least the reasons herein, Applicant respectfully requests withdrawal of the rejections and objections, and allowance of the claims.

I. Formalities, objection

Applicant thanks the Examiner for acknowledging foreign priority. The Examiner objects to claims 13-18 and 37-42 for allegedly failing to further limit the scope of claims, and claims 2, 22, 26 and 46 stand objected to due to the use of unnecessary standards. As shown in the foregoing amendments, Applicant has amended the claimed subject matter to overcome the Examiner's objections.

Additionally, with respect to the objection of under Item 1 of the Office Action, Applicant respectfully traverses the objection. For example, but not by way of limitation, Applicant respectfully submits that claim 37 further limits claim 36, to the extent that the photosensitive drum includes a resin composition including the microspherical inorganic material. Applicant respectfully submits that similar arguments can be applied to the claims that stand objected to.

II. The claims are in proper condition under 35 U.S.C. § 112, 1st and 2nd paragraphs

A. 35 U.S.C. § 112, 1st paragraph

Claims 23 and 47 stand rejected under 35 U.S.C. § 112, 1st paragraph due to alleged lack of written description. The Examiner asserts that the $\tan \delta$ disclosed at application pages 25 and 33-34 does not explain how that value is derived from a complex modulus of elasticity. For at least the reasons described herein, Applicant respectfully traverses the rejection under 35 U.S.C. § 112, 1st paragraph.

Applicant respectfully submits that one skilled in the art at the time of the claimed invention would easily understand the quantity “ $\tan \delta$ ” and the “complex modulus of elasticity” and the relationship therebetween. As would have been understood by one skilled in the art at the time of the invention, the modulus of elasticity is generally defined as a value given by dividing the stress by the strain. On the other hand, in the dynamic viscoelasticity, since the each value of the stress and the strain is complex number, the modulus of elasticity given in accordance with the definition becomes a complex number. That is commonly referred to in this art as the “complex modulus of elasticity”.

The “complex modulus of elasticity” is given from the values of the stress and the strain which are measured by giving the vibration to the target material repeatedly. Also, the quantity “ $\tan \delta$ ” is value to represent the loss angle δ is calculated from the stress and the tangent. The loss angle δ is calculated from the stress strain. When the quantity “ $\tan \delta$ ” of the target material is larger, the vibration absorption of the material is larger and the material inclines to exotherm.

Applicant respectfully submits that one skilled in the art would have known the contents of the “tan δ ” and the “complex modulus of elasticity” as described above, and one would thus easily understand how the quantity “tan δ ” is derived from the “complex modulus of elasticity”.

Accordingly, Applicant respectfully requests withdrawal of the rejection under 35 U.S.C. § 112, 1st paragraph.

B. 35 U.S.C. § 112, 2nd paragraph

Claims 1-48 stand rejected under 35 U.S.C. § 112, 2nd paragraph due to alleged indefiniteness. With respect to the rejection of claims 1, 3, 25 and 27, independent claims 1 and 25 have been amended to further define the low absorption water resin, thus overcoming this rejection. Applicant respectfully submits that the dependent claims are in proper condition as well, due to their dependence from claims that recite percentage of water absorbed.

With respect to the claimed terms “flake-shaped” and “fly ash”, Applicant respectfully submits that these terms are well-known in the art. Further, “fly ash” does not refer to a specific chemical composition of a substance, as is well-known in the art. Applicant respectfully submits that the foregoing terms are believed to be definite, and thus, the Examiner’s indefiniteness rejections of the claims reciting those terms is respectfully traversed.

Similarly, for the claimed tan δ , claims 23 and 47 have been amended. Additionally, Applicant refers the Examiner to the foregoing discussion of that term. It is submitted that use of tan δ in the claims is definite.

Accordingly, Applicant respectfully requests withdrawal of the rejections under 35 U.S.C. § 112, 2nd paragraph.

III. Allowable subject matter

The Office Action does not include any prior art rejections for claims 13-18 and 37-42. Therefore, it is believed that these claims contain allowable subject matter. For at least the reasons discussed above, the subject matter of these claims is now believed to be in proper condition.

Accordingly, Applicant has amended independent claims 12 and 36 to recite the subject matter of dependent claims 13 and 37, respectively, thus placing allowable subject matter in the independent claims. Accordingly, Applicant respectfully submits that claims 12-18 and 36-42 should be allowed.

III. Claims 12, 19, 20, 36, 43 and 44 are novel

Claims 12 and 36 stand rejected due to alleged anticipation under 35 U.S.C. § 102(b) over Yoshinaka et al., and claims 19, 20, 43 and 44 stand rejected under 35 U.S.C. § 102(b) over Kito et al. As shown in the foregoing amendments, independent claims 12 and 36 have been amended to recite subject matter believed to be allowable. Accordingly, withdrawal of the rejection of claims 12 and 19 is respectfully requested.

Further, Applicant respectfully submits that Kito fails to disclose that the base body has a surface roughness such that a center line average height Ra is in a range of less than 0.2 μm and a maximum height Rmax is in a range of less than 0.8 μm , as recited in independent claims 19 and 43. At page 11 of the Office Action, the Examiner acknowledges that Kito fails to disclose the aforementioned claimed features. The treatment of the combination of Kito and Iizuka with respect to this claimed limitation is discussed in greater detail below in Section IV.

Applicant also submits that dependent claims 20 and 44 are allowable for at least the same reasons as respective independent claims 19 and 43, from which they depend. Thus, withdrawal of the anticipation rejections is respectfully requested.

IV. Claims 1-11, 21-35, and 45-48 would not have been obvious

Claims 1-11, 21-35 and 45-48 stand rejected due to alleged obviousness under 35 U.S.C. § 103(a). More specifically, claims 1-5 and 25-29 stand rejected under §103(a) as being unpatentable over Matsuura et al. in view of Nishimuro et al., claims 6, 7, 30 and 31 stand rejected under §103(a) as being unpatentable over Matsuura et al. in view of Nishimuro et al., and further in view of Coran et al., claims 8-11 and 32-35 stand rejected under §103(a) as being unpatentable over Iizuka et al. in view of Sakano et al., claims 21, 22, 45 and 46 stand rejected under §103(a) as being unpatentable over Kito et al. in view of Iizuka et al., and claims 23, 24, 47 and 48 stand rejected under §103(a) as being unpatentable over Morita et al.

Applicant respectfully submits that the Examiner's proposed combinations of references fails to teach or suggest all of the claimed combinations of features, as required for a prima facie obviousness rejection. For at least the reasons herein, Applicant respectfully requests withdrawal of the rejections, and allowance of the claims.

Claims 1-5 and 25-29

Claims 2 and 26 are cancelled, thus rendering the rejection of those claims moot. With respect to independent claim 1, Applicant respectfully submits that the Examiner's proposed combination of references fails to teach or suggest that the resin base material is a mixed resin

that includes a lower water absorption resin having a water absorption percentage in a range of 0.3% or less, as recited in independent claims 1 and 25.

As acknowledged by the Examiner, none of the cited art of record suggest this claimed feature. To overcome this deficiency, the Examiner proposes that routine experimentation, in the absence of unexpected results indicating a critical nature of the range, would have resulted in one skilled in the art arriving at that range without undue experimentation.

Applicant respectfully disagrees with the assertion that routine experimentation by one skilled in the art would have resulted in the claimed range. Applicant notes that the Examiner has pointed out that Matsuura optimizes the conductive sheet based on resistivity, such that it changes little with respect to water vapor. However, Applicant respectfully submits that while Matsuura optimizes based on resistivity, there is no motivation in the art of record to optimize based on percent absorbance. Matsuura does not clearly identify the claimed low water absorbing resin as a parameter to be optimized.

Under MPEP §2144.05 and In re Antonie, 195 USPQ 6 (CCPA 1977), the prior art must recognize the parameter to be optimized as a result-effective variable before the determination of the optimum or workable ranges might be characterized as routine experimentation. As noted above, the prior makes no such characterization. Further, Applicant respectfully submits that varying the percentage of water absorption in the low water resin is only disclosed in the present application.

Applicant respectfully submits that in the absence of the presently claimed invention, there is no motivation to optimize this parameter, and the modification is therefore improper. As

a result, Applicant respectfully submits that one skilled in the art would not have been motivated to perform this optimization.

Dependent claims 3-5 and 27-29 respectively depend from independent claims 1 and 26. Applicant respectfully submits that the dependent claims are allowable for at least the same reasons as the independent claims from which they depend. Accordingly, Applicant respectfully requests withdrawal of the rejections, and allowance of the claims.

Claims 6, 7, 30 and 31

Claims 6 and 7 depend from independent claim 1, and claims 30 and 31 depend from independent claim 25. Applicant respectfully submits that these dependent claims are allowable for at least the same reason as the independent claims from which they depend. Therefore, Applicant respectfully requests withdrawal of this rejection, and allowance of the claims.

Claims 8-11 and 32-35

The Examiner acknowledges that Iizuka fails to teach that the carbon black has a DPB oil absorption amount of 130 ml/100g or more, as recited in independent claims 8 and 32. To cure that acknowledged deficiency, the Examiner proposes to combine Sakano into Iizuka.

Applicant respectfully submits that at the time of the claimed invention, Iizuka was commonly assigned to Bridgestone Corporation. Applicant notes that the present application claims foreign priority to date prior to the April 24, 2001 publication date of Iizuka. As a result, Applicant respectfully submits that Iizuka is only available as a 35 U.S.C. § 102(e)-type reference.

Thus, Applicant respectfully submits that Iizuka and the presently claimed invention were commonly owned at the time of the invention. Accordingly, under 35 U.S.C. § 103(c), Iizuka is disqualified as a reference for obviousness-type rejections under 35 U.S.C. § 103(a). Applicant respectfully submits that without the Iizuka reference, the rejection of claims 8-11 and 32-35 must fall, because Sakano alone fails to teach or suggest all of the claimed combinations of features recited in claims 8-11 and 32-35.

Additionally, with regard to Sakano, Applicant respectfully submits that the object and function of adding the carbon black differs from that of the claimed invention. Applicant refers the Examiner to Sakano, column 2, lines 37-42, which discloses: "The carbon black to be used in the present invention has an oil absorption amount of not less than 200 ml/100 g and a surface area of not less than 500 m²/g. The use of any carbon black which does not satisfy the said requirements can not afford an electroplated film of good quality."

In contrast, according to the presently claimed invention, the carbon black as a conductive agent is specified by DBP oil absorption amount, because the growth of the structure of the carbon black is sufficient so that the conductivity of the carbon black is good. Then, a small amount of the carbon black can be added for allowing the base body for a photosensitive drum to exhibit a sufficient conductivity.

Applicant respectfully submits that Sakano does not teach or suggest the requirement properties on the base body for a photosensitive drum to exhibit a sufficient conductivity and that the resin composition comprises a resin base material and a conductive agent, as recited in independent claims 8 and 32. Applicant respectfully submits that the description of the

electroplated film of Sakano is irrelevant to the requirement properties on a photosensitive drum.

Thus, it is submitted that Sakano teaches away from the claimed invention, and a prima facie case of obviousness has not been established.

Dependent claims 9-11 and 33-35 respectively depend from independent claims 8 and 32. Applicant respectfully submits that the dependent claims are allowable for at least the same reasons as the independent claims from which they depend. Accordingly, Applicant respectfully requests withdrawal of the rejections, and allowance of the claims.

Claims 21, 22, 45 and 46; Independent claims 19 and 43

As noted above, Applicant respectfully submits that at the time of the claimed invention, Iizuka was commonly assigned to Bridgestone Corporation. Thus, Applicant respectfully submits that Iizuka and the presently claimed invention were commonly owned at the time of the invention.

Accordingly, under 35 U.S.C. § 103(c), Iizuka is disqualified as a reference for obviousness-type rejections under 35 U.S.C. § 103(a). Applicant respectfully submits that without the Iizuka reference, the rejection of claims 21, 22 (incorporated into independent claim 19), 45 and 46 (incorporated into independent claim 43) falls, because Sakano alone fails to teach or suggest all of the claimed combinations of those features.

Claims 23, 24, 47 and 48

As shown in the foregoing amendments, claims 23 and 47 are amended. Accordingly, Applicant respectfully submits that Morita fails to disclose or suggest a cylindrical base body formed of a conductive resin which consists essentially of polyamide resin, as recited in claims

23 and 47. The Examiner asserts that the sounding deadening member is equivalent to the claimed base body, and that the photosensitive receptor drum is equivalent to the claimed photosensitive layer.

Applicant respectfully disagrees with the Examiner's characterization. For example, but not by way of limitation, if the Examiner's characterization was correct, the sounding deadening member of Morita et al. would have to be made of (meth)acrylic acid ester monomers and a styrene-base resin, which are distinguished from claimed polyamide resin.

Applicant respectfully submits that polyamide resins such as nylons have technical characteristics in terms of good surface smoothness required for forming a photosensitive layer, and excellent chemical resistance and mechanical strength. However, it is submitted that Morita teaches away from the claimed invention, due to the difference of the functions or effects based on the base resin or Morita.

Therefore, Applicant respectfully submits that Morita does not disclose and suggest a cylindrical base body formed of a conductive resin which consists essentially of polyamide resin, as recited in independent claims 23 and 47.

Dependent claims 24 and 48 depend from independent claims 23 and 47, respectively. Applicant respectfully submits that the independent claims are allowable for at least the same reasons as the independent claims from which they depend. Accordingly, Applicant respectfully requests withdrawal of this rejection.

V. Conclusion

Amendment Under 37 C.F.R. § 1.111
U.S. Appln. No. 09/988,283

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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APPENDIX
VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Claims 2, 13, 22, 26, 37 and 46 are canceled.

The claims are amended as follows:

1. (Amended) A base body for a photosensitive drum, which is obtained by molding a conductive resin composition into a cylindrical shape,

said resin composition [containing]comprising a resin base material and a conductive agent,

wherein said resin base material is a mixed resin of a polyamide resin and a low water absorption resin having a water absorption percentage in a range of 0.3% or less.

4. (Amended) A base body for a photosensitive drum according to claim 1, wherein said polyamide resin is one kind or two or more kinds selected from polyamide resins including polyamide 11, polyamide 12, polyamide 46, polyamide 6, polyamide 66, [polyamide MXD6] polyamide resin produced by polycondensation of metaxylylene diamine and adipic acid, polyamide 610, polyamide 612, polyamide 1212, and copolymers thereof.

6. (Amended) A base body for a photosensitive drum according to claim 1, wherein said conductive resin composition further [contains]comprises a compatibility enhancing agent for enhancing a compatibility between said polyamide resin and said low water absorption resin.

8. (Amended) A base body for a photosensitive drum, which is obtained by molding a conductive resin composition into a cylindrical shape,

said resin composition [containing]comprising a resin base material and a conductive agent,

wherein said conductive agent is carbon black having a [DBP] dibutyl phthalate (DBP) oil absorption amount in a range of 130 ml/100g or more.

10. (Amended) A base body for a photosensitive drum according to claim 8, wherein said resin base material [contains]comprises a polyamide resin obtained from metaxylylene diamine and adipic acid and/or a polyamide resin obtained from ϵ -caprolactam.

11. (Amended) A base body for a photosensitive drum according to claim 8, wherein said conductive resin composition [contains]comprises an inorganic filler for reinforcement.

12. (Amended) A base body for a photosensitive drum, which is obtained by molding a conductive resin composition into a cylindrical shape,

said resin composition [containing]comprising an inorganic filler for reinforcement, wherein said inorganic filler for reinforcement is [either or both]at least one of a micro-spherical inorganic material and a flake-shaped inorganic material, and said micro-spherical inorganic material is in the form of spherical particles having an average particle size in a range of 50 μm or less.

19. (Amended) A base body for a photosensitive drum, which is obtained by molding a conductive resin composition into a cylindrical shape,

said resin composition [containing]comprising an inorganic filler for reinforcement, wherein said inorganic filler for reinforcement is a fibrous inorganic material in the form of fibers each having a length ranging from 8 to 50 μm and a diameter ranging from 0.1 to 5 μm ,

and wherein said base body has a surface roughness such that a center line average height Ra is in a range of less than 0.2 μm and a maximum height Rmax is in a range of less than 0.8 μm .

23 (Amended) A base body for a photosensitive drum, which is obtained by molding a conductive resin composition into a cylindrical shape,

wherein said resin composition consists essentially of polyamide resin and has a factor $\tan\delta$ expressing a frequency characteristic of said resin composition measured by [an one-end fixation method using] an apparatus for measuring a complex modulus of elasticity, which factor is in a range of 0.05 or more.

24. (Amended) A base body for a photosensitive drum according to claim 23, wherein said conductive resin composition further [contains]comprises an inorganic filler for reinforcement.

25. (Amended) A photosensitive drum comprising:

a cylindrical base body, which is obtained by molding a conductive resin composition into a cylindrical shape; and

a photosensitive layer formed on an outer peripheral surface of said cylindrical base body;

wherein said resin composition [contains]comprises a resin base material and a conductive agent, and said resin base material is a mixed resin of a polyamide resin and a low water absorption resin having a water absorption percentage in a range of 0.3% or less.

28. (Amended) A photosensitive drum according to claim 25, wherein said polyamide resin is one kind or two or more kinds selected from polyamide resins including polyamide 11,

polyamide 12, polyamide 46, polyamide 6, polyamide 66, [polyamide MXD6] polyamide resin produced by polycondensation of metaxylylene diamine and adipic acid, polyamide 610, polyamide 612, polyamide 1212, and copolymers thereof.

30. (Amended) A photosensitive drum according to claim 25, wherein said conductive resin composition further [contains]comprises a compatibility enhancing agent for enhancing a compatibility between said polyamide resin and said low water absorption resin.

32. (Amended) A photosensitive drum comprising:
a cylindrical base body, which is obtained by molding a conductive resin composition into a cylindrical shape; and

a photosensitive layer formed on an outer peripheral surface of said cylindrical base body;

wherein said resin composition [contains]comprises a resin base material and a conductive agent, and said conductive agent is carbon black having a [DBP] dibutyl phthalate (DBP) oil absorption amount in a range of 130 ml/100g or more.

34. (Amended) A photosensitive drum according to claim 32, wherein said resin base material [contains]comprises a polyamide resin obtained from metaxylylene diamine and adipic acid and/or a polyamide resin obtained from ϵ -caprolactam.

35. (Amended) A photosensitive drum according to claim 32, wherein said conductive resin composition [contains]comprises an inorganic filler for reinforcement.

36. (Amended) A photosensitive drum comprising:

a cylindrical base body, which is obtained by molding a conductive resin composition into a cylindrical shape; and

a photosensitive layer formed on an outer peripheral surface of said cylindrical base body;

wherein said resin composition [contains]comprises an inorganic filler for reinforcement, and said inorganic filler for reinforcement is [either or both]at least one of a micro-spherical inorganic material and a flake-shaped inorganic material, and wherein said micro-spherical inorganic material is in the form of spherical particles having an average particle size in a range of 50 μm or less.

43. (Amended) A photosensitive drum comprising:

a cylindrical base body, which is obtained by molding a conductive resin composition into a cylindrical shape; and

a photosensitive layer formed on an outer peripheral surface of said cylindrical base body;

wherein said resin composition [contains]comprises an inorganic filler for reinforcement, and said inorganic filler for reinforcement is a fibrous inorganic material in the form of fibers each having a length ranging from 8 to 50 μm and a diameter ranging from 0.1 to 5 μm , and wherein said base body has a surface roughness such that a center line average height R_a is in a range of less than 0.2 μm and a maximum height R_{max} is in a range of less than 0.8 μm .

47. (Amended) A photosensitive drum comprising:

a cylindrical base body, which is obtained by molding a conductive resin composition into a cylindrical shape; and

a photosensitive layer formed on said cylindrical base body;

wherein said resin composition consists essentially of polyamide resin and has a factor $\tan\delta$ expressing a frequency characteristic of said resin composition measured by [an one-end fixation method using] an apparatus for measuring a complex modulus of elasticity, which factor is in a range of 0.05 or more.

48. (Amended) A photosensitive drum according to claim 47, wherein said conductive resin composition further [contains]comprises an inorganic filler for reinforcement.